



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/872,597	06/01/2001	James M. Reuter	P01-3666	2619

22879 7590 02/24/2004

HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER

ROBERTSON, DAVID L

ART UNIT	PAPER NUMBER
----------	--------------

2186

DATE MAILED: 02/24/2004

13

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/872,597

Applicant(s)

REUTER ET AL.

Examiner

David L. Robertson

Art Unit

2186

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2003 and 29 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: Request for Information.

Art Unit: 2186

This Office action is in response to the RCE filed October 29, 2003.

The drawings are objected to because of the following:

There is nothing in figure 2 labeled 220, see reference to "virtual drive segments 220" on page 5, line 5.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The disclosure is objected to because of the following informalities:

The "blocking flag" (formerly "blocking flag 280" is nowhere described or adequately discussed, see amended paragraphs beginning at page 15, line 5 and page 18, line 1.

Appropriate correction is required.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made, to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

Art Unit: 2186

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9, 11 and 17-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 9 and 11 recite the creation of "a new segment" in the first copy and transferring data from the first copy to the second copy so that the new segment is created in the second copy, however, the antecedent for this new segment shows that these segments are part of the virtual disks, not the tables (see claims 1, 8 and 10) thus the claimed relationship is not understood. Claim 17 recites the steps of receiving a command, activating states within a table, completing I/O operations within the table and updating the table. The specification discloses three operations, called by the applicant the disk copy operation, the forward-delta process and the reverse-delta process. However, it is not clear from the language used in the specification and the claims how the language of the claim corresponds to any of the disclosed processes, see also 37 C.F.R. § 1.75(d)(1). Due to the ambiguities and confusion in claims 9, 11 and 17, no art has been applied thereto, see *In re Steele*, 49 CCPA 1295, 305 F.2d 859, 134 USPQ 292 (1962) and *In re Wilson*, 424 F.2d 1382, 165 USPQ 494 (CCPA 1970). The examiner will not speculate as to the intended meaning.

Claims 1, 8, 10, 12, 14 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by the Compaq TechNote *Disk Mirroring with VERITAS VxMirror* (hereafter Veritas). The Veritas document discloses the existence of a *method for creating a second virtual disk or a new snapshot disk using the contents of a first virtual disk by providing a first table*

Art Unit: 2186

having one or more entries that associate original segments of the first virtual disk with locations in one or more storage containers, note that the first disk is a UNIX partition which includes a directory tables that map (or associate) entries with locations, and copying the entries of the first table to a second table to create a second virtual disk, note that the first disk is mirrored onto the second disk, including copying the directory tables (see step 17, page 3-13). The system disclosed further receives write operations to the original disk, allocates a new segment (as needed) for the second virtual disk (as well as to the original, as necessary, because the system is operating in mirror mode), copies the contents at the original segment to the new segment, (note this was initially performed when the mirror drive was created) and completing the write operation to both the original and the new segment (understood, see also page 1-4). The Veritas system further suggests allocating a new segment of storage space for a virtual disk (see for example steps 8-10 on page 2-10) and copying an existing segment of data for another virtual disk into said new segment (see step 15, page 2-11). That a mapping table corresponding to the existing and new segments is maintained and updated as needed is understood (see independently accessing two copies of the same data, page 1-6). These storage locations clearly comprise blocks of data within the storage device and the table resides on memory that is clearly coupled to the host.

Claims 2-7 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Compaq TechNote *Disk Mirroring with VERITAS VxMirror* (hereafter Veritas) in view of common practices in the art and applicants' admitted prior art. The Veritas document has been discussed above. It does not teach modifying tables to prevent write operations to the first virtual disk, delaying I/O operations, where the memory in which the mapping table is stored is

Art Unit: 2186

volatile or where the mapped segments are about 1 MB. The Veritas reference is directed to creating a copy, not a snapshot. Snapshots (as cogently disclosed by applicant's admitted prior art) are a point-in-time record. It would clearly have been obvious to use steps similar to those taught by Veritas to create a snapshot, the only difference being that the snapshot volume would no longer be modified. UNIX files systems provide the ability to set Nw or invalid flags to prevent subsequent writes to a particular volume. Thus, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to have modified the snapshot volume using the tools readily available in UNIX after creating it in the manner disclosed by Veritas so that it would no longer be written to by using either a Nw or invalid flag. Further, while the Veritas reference teaches the copying of one volume onto another as a background operation, clearly this process would be accelerated if other writes or changes to the volume were postponed until after the copy was made (as opposed to trying to copy changing data). Thus it would have been intuitively obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to have suspended (i.e., delayed and reactivated) writes to the volume until after the copy process is complete.

Applicants' arguments filed September 29, 2003 have been fully considered but they are not persuasive.

Applicants' arguments with respect to claims 1-18 have been considered but are moot in view of the new grounds of rejection.

This Office action has an attached requirement for information under 37 CFR § 1.105. A complete response to this Office action must include a complete response to the attached

Art Unit: 2186

requirement for information. The time period for reply to the attached requirement coincides with the time period for reply to this Office action.

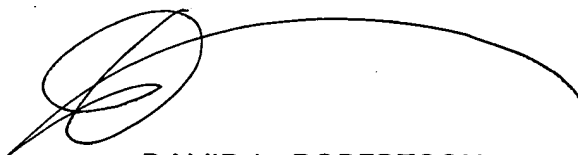
Any inquiry of a general nature or relating to the status of this application should be directed to the technology center receptionist whose telephone number is (703) 305-3900.

Direct any inquiries concerning drawing review to the Drawing Review Branch (703) 305-8404.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David L. Robertson whose telephone number is (703) 305-3825.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Kim, can be reached at 305-3821. The fax number for Official communications is (703) 872-9306.

Communications which are not application specific may also be posted on e-mail at David.Robertson@USPTO.gov.

A handwritten signature in black ink, consisting of a stylized 'D' and 'R' followed by a long horizontal flourish.

DAVID L. ROBERTSON
PRIMARY EXAMINER
ART UNIT 2186

Request for Information under 37 C.F.R. §1.105
(Part of Paper No. 13)

Applicants and the assignee (presently recorded as Compaq Information Technologies Group, L.P. but believed to be Hewlett-Packard Company) are required under 37 C.F.R. § 1.105 to provide the following information that the examiner has determined is reasonably necessary to the examination of this application.

The information is required to establish the level of ordinary skill at the time of the invention (see *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966)), particularly with regard to the claimed subject matter of creating a second virtual disk or new snapshot disk, mapping virtual segments thereof and maintaining tables for mapping storage locations within a network.

The information is additionally required to complete the background description in the disclosure by documenting the particulars of the recited known methodologies described at page 2, lines 7-12 of the specification.

In response to this requirement, please provide a copy of any non-patent literature, published application, or patent (U.S., or foreign), by any of the inventors that relate to the items noted above.

In response to this requirement, please provide a copy of any non-patent literature, published application or patent (U.S., or foreign) that was used to draft the application.

In response to this requirement, please provide a copy of any non-patent literature, published application or patent (U.S., or foreign) that was used in the inventing process, such as designing around or providing a solution to accomplish an invention result.

In response to this requirement, please provide the names of any products or services representative of the recited known methodologies noted above.

In responding to those requirements that require copies of documents, where the document is a bound text or a single article over 50 pages, the requirement may be met by providing copies of those pages that provide the particular subject matter indicated in the requirement, or where such subject matter was not indicated, the subject matter found in applicants' disclosure.

The fee and certification requirements of 37 C.F.R. § 1.97 are waived for those documents submitted in reply to this requirement. This waiver extends only to those documents within the scope of this requirement under 37 C.F.R. § 1.105 that are included in the applicants' first complete communication responding to this requirement. Any information disclosures beyond the scope of this requirement under 37 C.F.R. § 1.105 are subject to the fee and certification requirements of 37 C.F.R. § 1.97.

Art Unit: 2186

Applicants are reminded that the reply to this requirement must be made with candor and good faith under 37 C.F.R. § 1.56. Where applicants do not have or cannot readily obtain an item of required information, a statement that the item is unknown or cannot be readily obtained will be accepted as a complete response to the requirement for that item.

This requirement is an attachment of the enclosed Office action. A complete response to the enclosed Office action must include a complete response to this requirement. The time period for reply to this requirement coincides with the time period for reply to the enclosed Office action, which is 3 months.

Approval for Request for Information



MATTHEW KIM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100